

ABSTRACT

An optical modulation apparatus is provided which implements a stable amplifying function by reducing the effect of reflected light rays from end faces of a bidirectional optical amplifier by imposing a numerical limitation on the relationship between the gain of the bidirectional optical amplifier and the loss of the optical modulator, or by inserting a polarization rotation section in a reflection type optical modulator including the bidirectional optical amplifier or in a multi-wavelength collective optical modulation system combining the multiple optical modulators. An optical modulation apparatus is provided which implements a stable amplifying function and cost reduction by reducing the effect of reflected light rays by interposing optical isolators at every alternate SOAs in a transmission-type optical modulation apparatus including a plurality of semiconductor optical amplifiers (SOAs) connected in a multistage fashion.